2-24-2017

An Introduction to the Portal ADAPT VIRGINIA

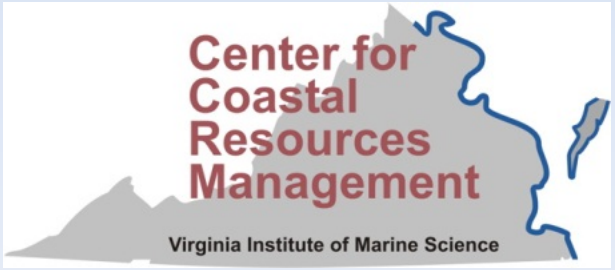
Marcia Berman
Virginia Institute of Marine Science

An Introduction to the Portal
ADAPT VIRGINIA

Marcia Berman

Center for Coastal Resources Management

Virginia Institute of Marine Science



ADAPT VIRGINIA

Evidence-based planning for rising sea levels

About ADAPT VIRGINIA

Information resource for individuals, programs and agencies engaged in planning for climate adaption

Photo by Robert Harris*/FEMA*

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Project Partners

Center for Coastal Resources Management
Virginia Institute of Marine Science

VIMS | William & Mary
Virginia Institute of Marine Science

Wetlands Watch
wetlandswatch.org

William & Mary Law School
Virginia Coastal Policy Center

William & Mary
Public Policy

DCR | Virginia Department of Conservation and Recreation

CCRFR

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FORECASTS ADAPTATIONS TOOLS MAPS & DATA PLANNING & POLICY

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FORECASTS

Forecasting water levels, temperature, and precipitation helps mitigate impacts and plan resilient communities.

ADAPTATIONS

Case studies illustrate how adaptation works through zoning, engineering and policy practices.

TOOLS

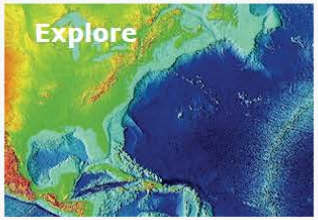
Tools assess risk and provide guidance to prepare for and respond to a changing environment.

MAPS & DATA

Adapt Virginia's comprehensive Geoportal provides easy and convenient ways to access and share geospatial data.

PLANNING & POLICY

Management strategies include comprehensive planning, zoning and building codes, insurance and the community rating system.



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FORECASTS

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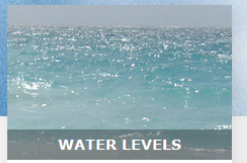
Forecasts

Climate change is responsible for changes in water levels, temperature, and precipitation. Our ability to forecast these changes helps mitigate impacts and plan for resilient communities. Forecasting traditionally uses historic data to determine the direction of future trends. Uncertainty is introduced when processes affecting change are not static over long time periods. Strategic integration of information across planning horizons can allow communities to more effectively plan for the next tide, a catastrophic storm, or a future landscape that might look very different from today.



Information on water levels now and into the future; real-time data, near and long-term predictions

Tidewatch

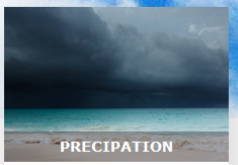
Tidewatch predicts a 36 hour water level forecast

Short Term

Based on history

Long Term

Based on scenario



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TIDEWATCH

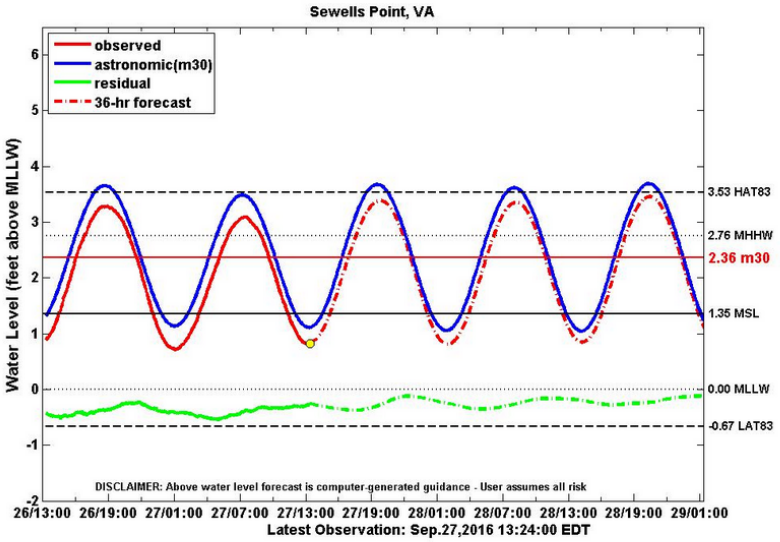
Tidewatch Stations

- Back River, Dandy Haven
- Bishops Head, Maryland
- Chesapeake Bay Bridge Tunnel (CBBT)
- Kiptopeke
- Lewisetta
- Money Point
- Sewells Point
- Wachapreague
- Windmill Point
- Yorktown Coast Guard Training Center

Home » Bay Info » Tidewatch » Stations » Sewells Point

Extratidal Water Level: 36-Hour Forecast

Sewells Point, VA (SWPT)



Other Intervals: Last 30 days | Last 3 days | Last 30 days cf Last 3 days | 36-hour Forecast

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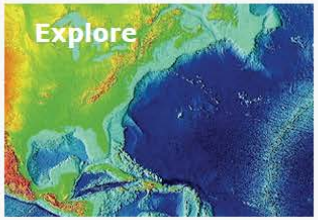

ADAPTATION STORIES

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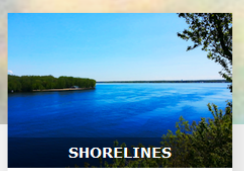
Adaptation

Learn how human and natural systems adjust to a new or changing environment. Adaptation can be measures that moderate negative effects, cope with the consequences of change, or those that take advantage of opportunities.

Flood adaptation categories:

- **Management/Retreat** - Human impacts are minimized by avoiding, minimizing or regulating human use of the coastal area
- **Accommodation** - Humans continue to use and occupy the coast, but adapt to reduce flood impact
- **Protection** - Structural (hard or soft) engineering aims to protect the land from the water



Green-gray approaches to shorelines can provide protection to ensure coastal community and shoreline resilience. Learn about living shorelines - What, when, where and how on the Center for Coastal Resources Management, Virginia Institute of Marine Science Living shorelines webpage.

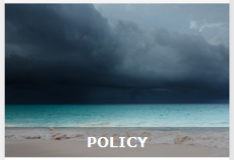
See and read the stories of living shoreline project locations in and around Virginia.

Where we live, work, learn, shop and play, how we get around and the power and water that support us are all subject to climate and flooding effects. Adaption practices can make our infrastructure more resilient.

View infrastructure story maps

Incorporation of forecasted future conditions into decisions increases the opportunity for managed retreat for human habitat and sustainability and resilience for natural habitats.

Economic drivers from flood insurance to building loans to natural capital finance all play a role in climate



Local, State and Federal policies can empower creative solutions.

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SHORELINES

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Living Shorelines:

Using Natural and Nature-Based Features

Living shorelines in lower energy settings can provide long-term protection, restoration, and enhancement of vegetated shoreline habitats through the strategic placement of plants, stone, sand fill and other structural or organic materials.

Explore case studies that highlight the use of natural or nature-based features to adapt to climate impacts.

Navigate through the stories three ways: scrolling down, using the bullet links to the left, or clicking on the list below.

- VIMS Teaching Marsh, Gloucester
- Hermitage Museum & Gardens Oyster Reef and Living Shoreline, Norfolk
- John's Point Living Shoreline, Gloucester
- Haven Creek Wetland and Walking Path Restoration, Norfolk
- Hail Cove Living Shoreline, Maryland
- Holly Point Nature Park, Deltaville
- 46th Street Project, Norfolk
- Virginia Zoo Living Shoreline and Oyster Reef, Norfolk
- Oyster Village/Sunnyside Road Living Shoreline, Oyster
- Hull Springs Farm Living Shoreline, Montross
- Reedville Living Shoreline, Reedville
- Jamestown Beach Restoration, Jamestown
- Phoebus Living Shoreline, Hampton
- Camp Occohannock Living Shoreline, Belle Haven
- Colley Bay Living Shoreline, Norfolk
- Additional Resources

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VIMS Center for Coastal Resources Management

Living Shorelines:
Using Natural and Nature-Based Features

John's Point Living Shoreline, Gloucester

Overhead image of the John's Point Landing, with breakwaters and new marsh visible.
Photo: Google Earth

Project Goals: Reduce erosion, create easy access for small boat launching, improve parking lot, provide a public demonstration site for living shorelines

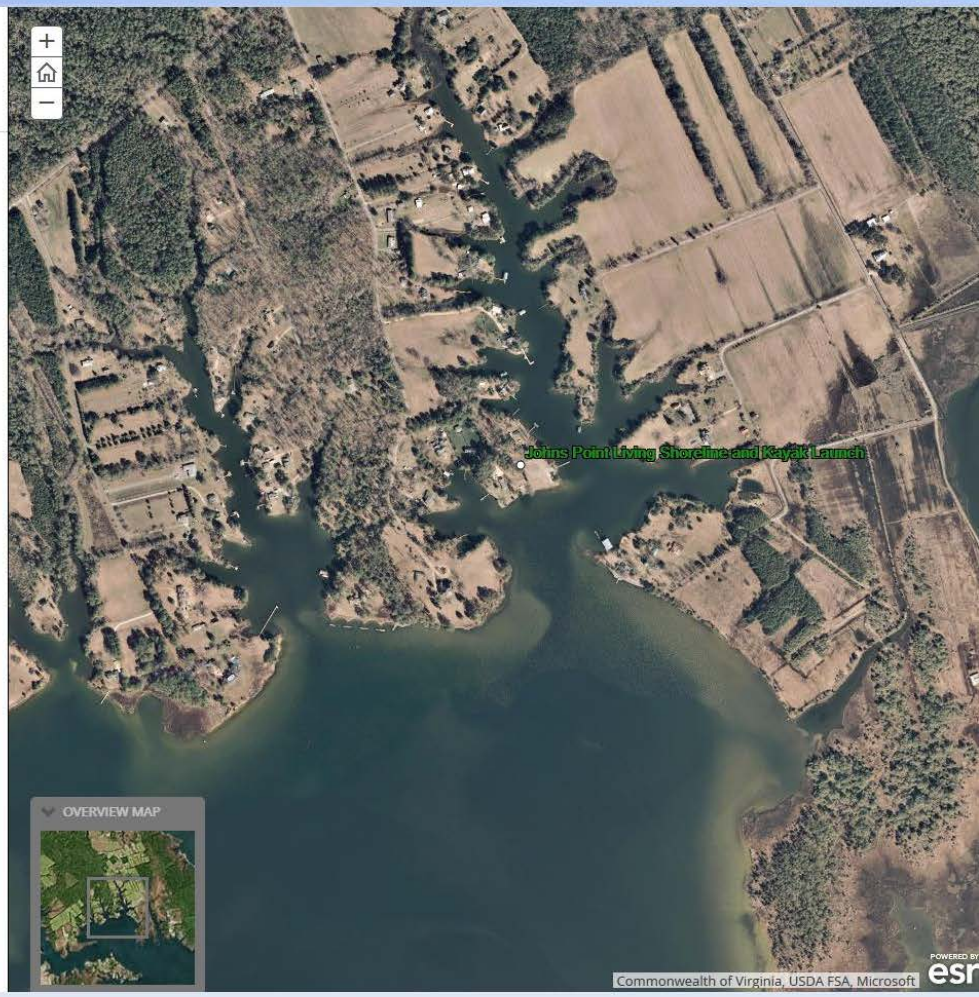
Techniques Used: Debris removal, segmented rock breakwaters, sand infill, salt marsh vegetation planting, goose exclusion fencing

Project Size: Approximately 300 linear feet of shoreline protected, 5,250 square feet of wetlands created

Project Partners: Gloucester County, VA Institute of Marine Science (VIMS), volunteer labor and materials donations

Funding Partners: Chesapeake Bay Trust, National Wildlife Foundation

Public Demonstration Site: Yes. Located at the end of John's Point Road (557) near Warner Hall in Gloucester.



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INFRASTRUCTURE

ADAPT VIRGINIA

Adaptation Stories: Managed Retreat

Managed retreat is the practice of moving communities, buildings, and other infrastructure landward, out of areas likely to flood. This practice reduces potential damages to valuable infrastructure and also allows beaches and marshes to migrate inland, slowing habitat loss.

These case studies highlight different techniques that communities have used to move infrastructure out of vulnerable areas.

Navigate through the stories three ways: scrolling down, using the bullet links to the left, or clicking on the list below.

- Managed Retreat: Surfers' Point Park, Ventura, CA
- End of Road Managed Retreat: Warwick, RI
- Managed Retreat: Pacifica State Beach, Pacifica, CA
- Property Buyout: Three neighborhoods, Staten Island, NY
- Property Buyout: Northfield, VT
- Community Relocation: Isle de Jean Charles, LA
- Additional Resources

Photo at right: Homes in Oakwood Beach, Staten Island, await demolition after major damage from 2012 storms caused homeowners to sell their properties to the state. Photo: Nathan Kensinger/ Curbed New York

Managed Retreat: Surfers' Point Park, Ventura, California

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Adaptation Stories: Managed Retreat

Property Buyout: Three Neighborhoods, Staten Island, New York

A storm-damaged home in Oakwood Beach is torn down after the owners (and most of their neighbors) accepted a buyout offer from the State. The neighborhood will not be redeveloped and will be allowed to go back to its natural wetlands state and function as a natural buffer against storm surge and flooding. Photo: Nathan Kensinger/Curbed New York

Project Goals: Assist homeowners living in high-risk areas to relocate to lower-risk areas, create a natural buffer for future storms, reduce damage costs in future storms

Techniques Used: Voluntary buyout of at-risk properties

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INFRASTRUCTURE

ADAPT Virginia - Adaptation Stories

Infrastructure Adaptation: Building Modifications

Where we live, work, learn, shop and play, how we get around and the power and water that support us are all subject to climate and flooding effects. Adaptation practices can make our infrastructure more resilient.

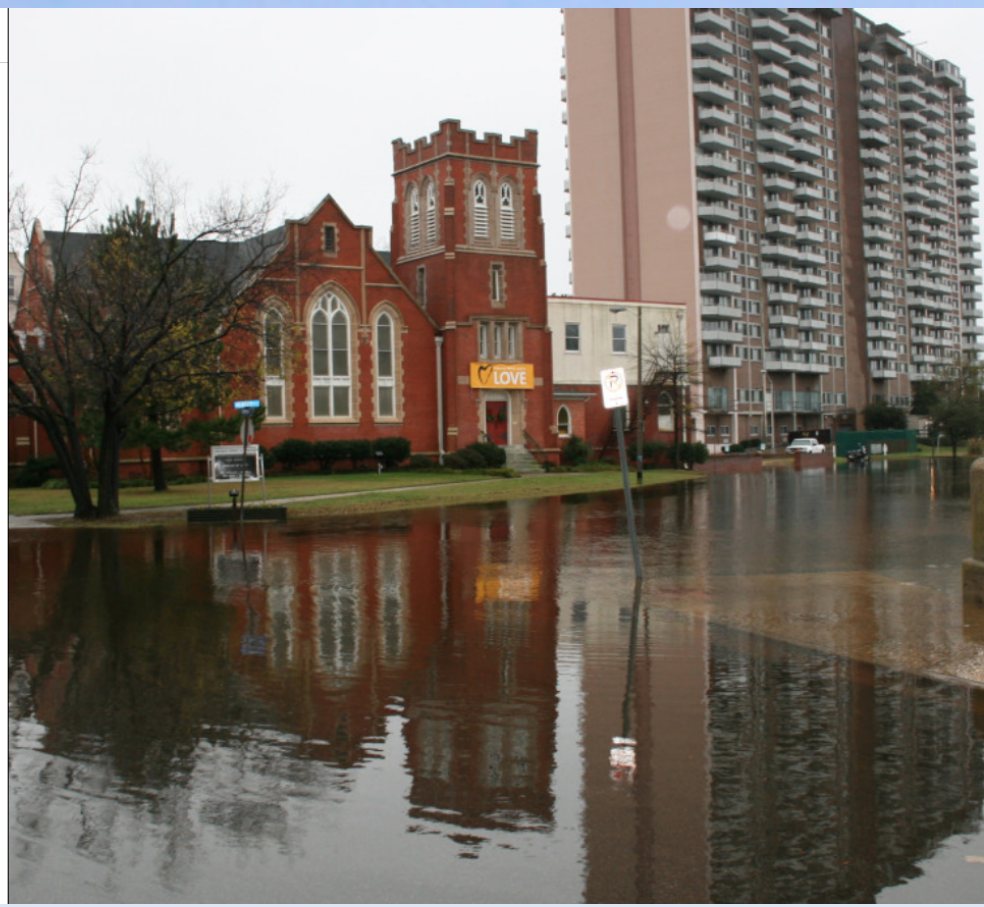
Explore these case studies that highlight ways to build new or retrofit older buildings with flood-resistant features.

Navigate through the stories three ways: scrolling down, using the bullet links to the left, or clicking on the list below.

- New Building Floodproofing: VIMS Eastern Shore Seawater Lab, VA
- Floodproofing Retrofit: Burnham Hall, VT
- Floodproofing Retrofit: Chrysler Museum, VA
- Elevating Home: Gloucester, VA
- Elevating Home Utilities: Scituate and Quincy, MA
- Building a New Resilient Community: Queens, NY
- Amphibious Home - New Building: UK
- Amphibious Homes Retrofit: LA
- Additional Resources

Photo at right: Portions of Norfolk flood during a high tide. Photo: Wetlands Watch

New Building Floodproofing: VIMS Eastern Shore Seawater Lab, VA



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Tuesday, September 27, 2016

FORECASTS ADAPTATIONS TOOLS MAPS & DATA PLANNING & POLICY

search

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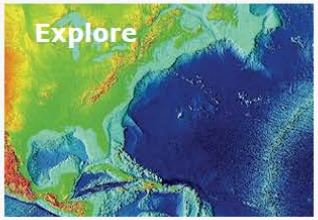

TOOLS

ADAPT VIRGINIA

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Thursday, February 23, 2017

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Evidence-based planning for changing climate

Tools

TOOLS are available to help assess risk and vulnerability to climate impacts, build community resiliency against extreme events, and provide guidance to prepare and respond to a changing environment.

FLOOD RISK

Floods are among the most frequent and costly natural disasters in terms of human hardship and economic loss. Learn more about flooding and floodplains in maps, models, documents and websites.

Virginia's Flood Risk Information System

HAZUS Flood Models

HAZUS Hurricane Models

SHORELINE MANAGEMENT

What is the best management strategy for your shoreline?

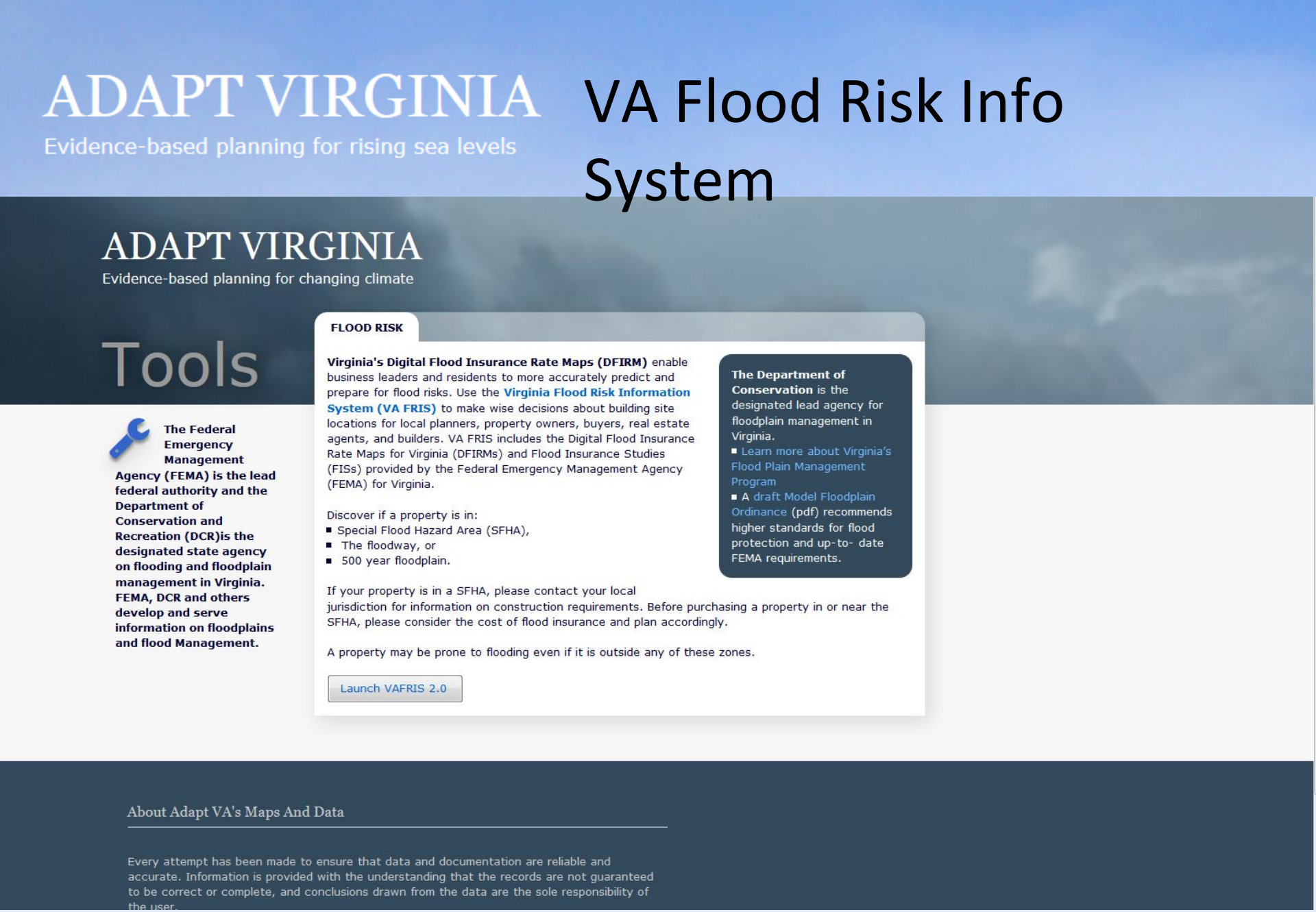
Learn more

Localities & map viewer

About Adapt VA's Maps And Data

Every attempt has been made to ensure that data and documentation are reliable and accurate. Information is provided with the understanding that the records are not guaranteed to be correct or complete, and conclusions drawn from the data are the sole responsibility of

VA Flood Risk Info System



Gina Dicicco and Dave Dowling

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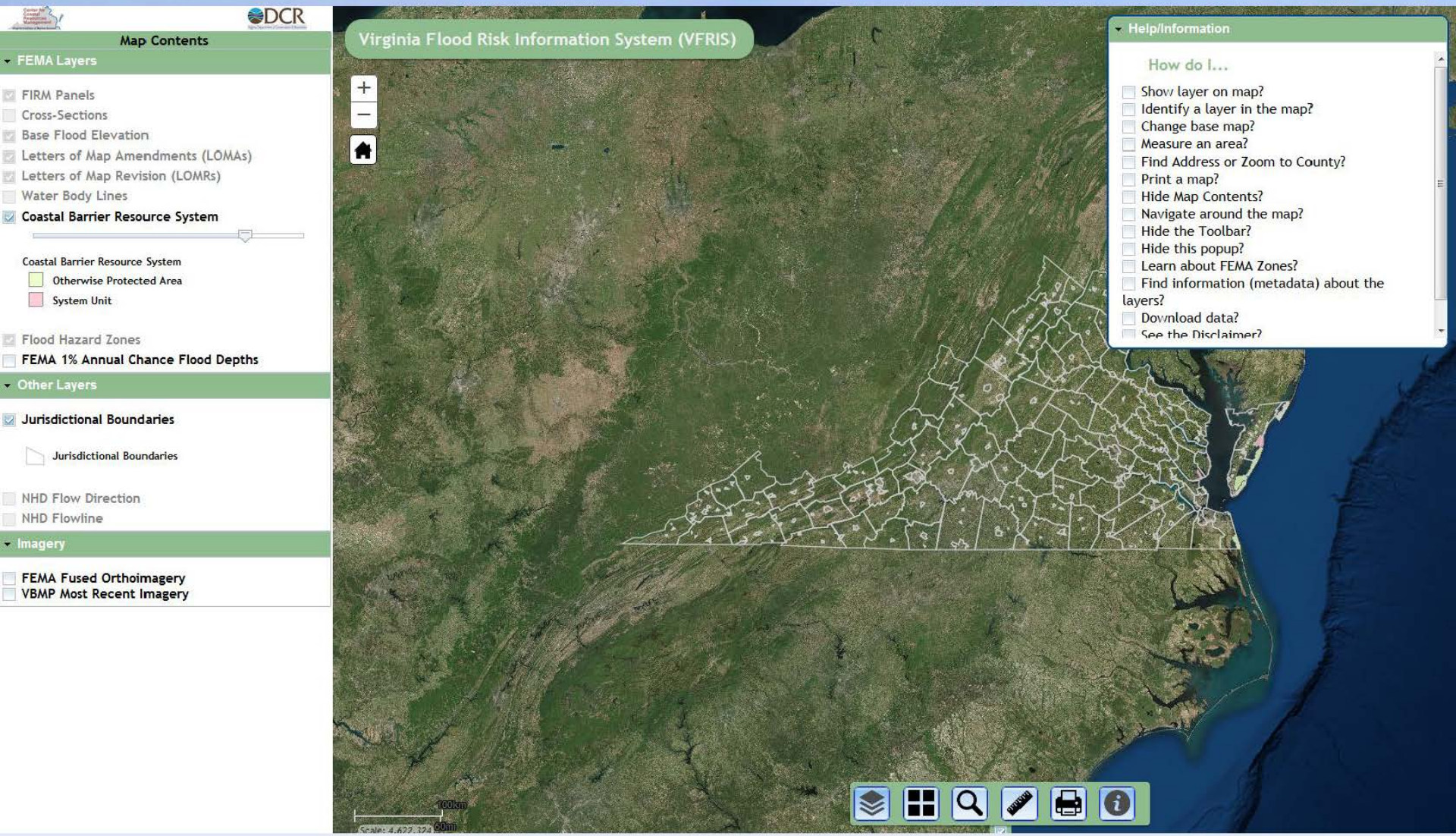

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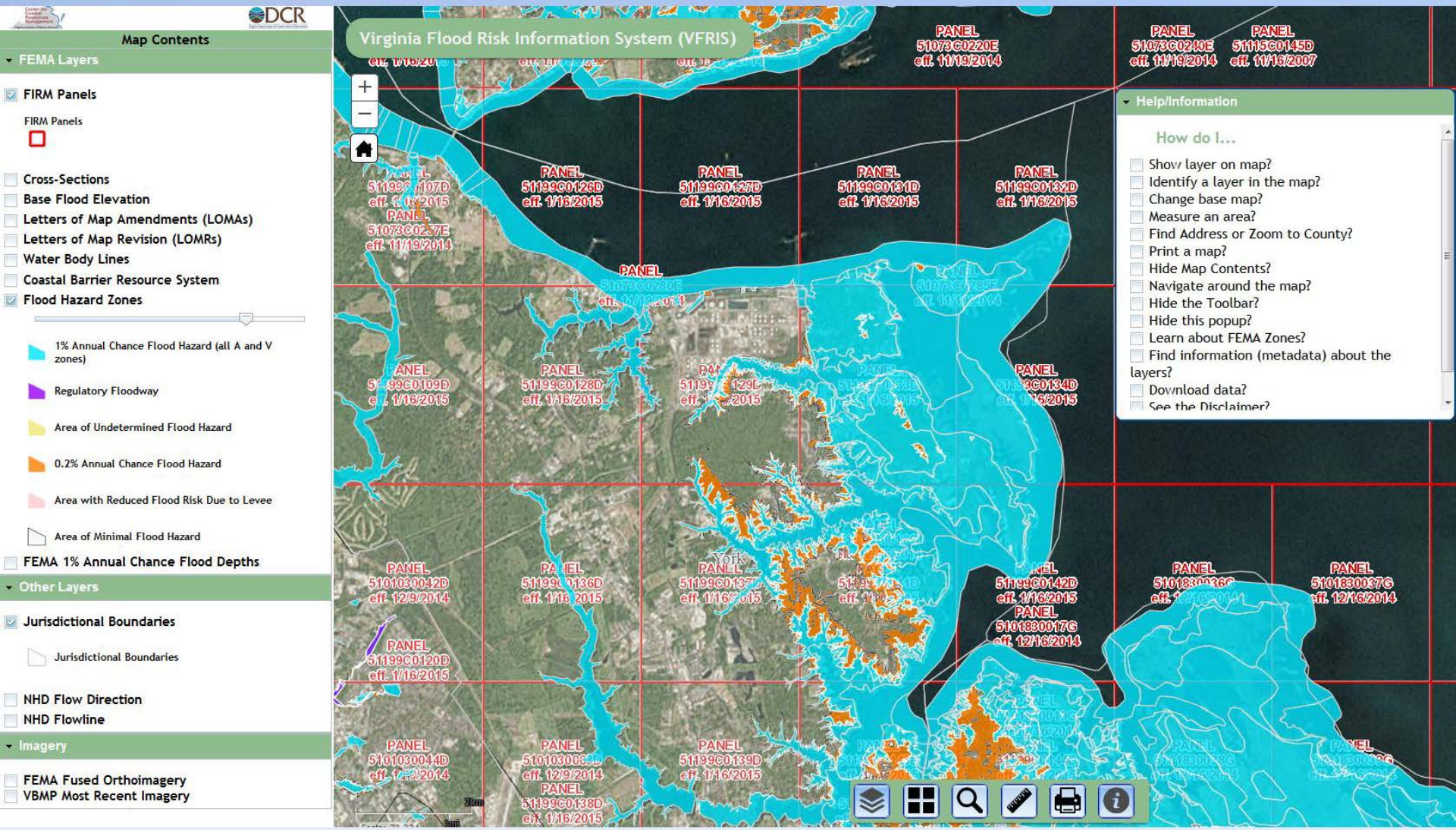

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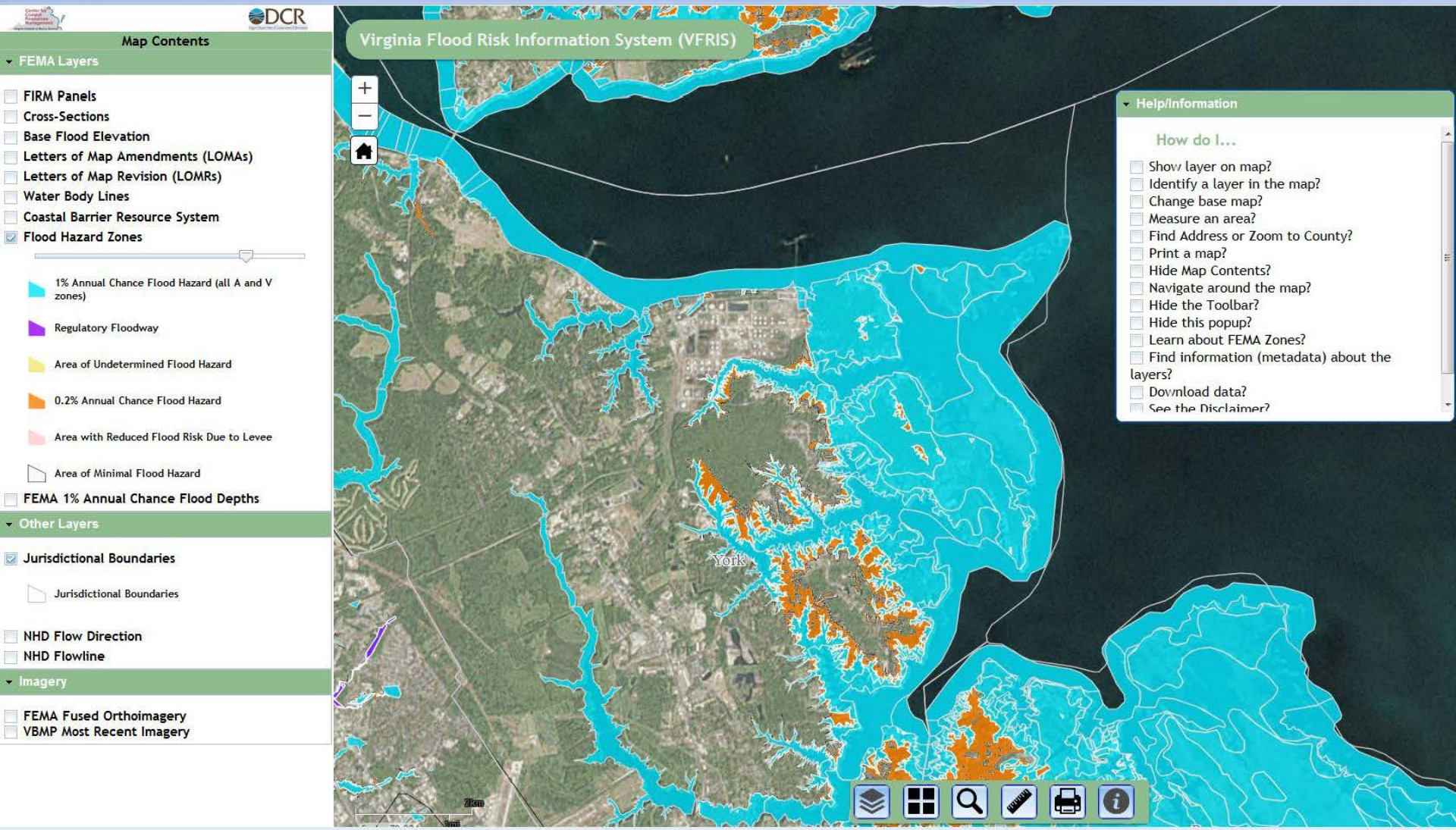

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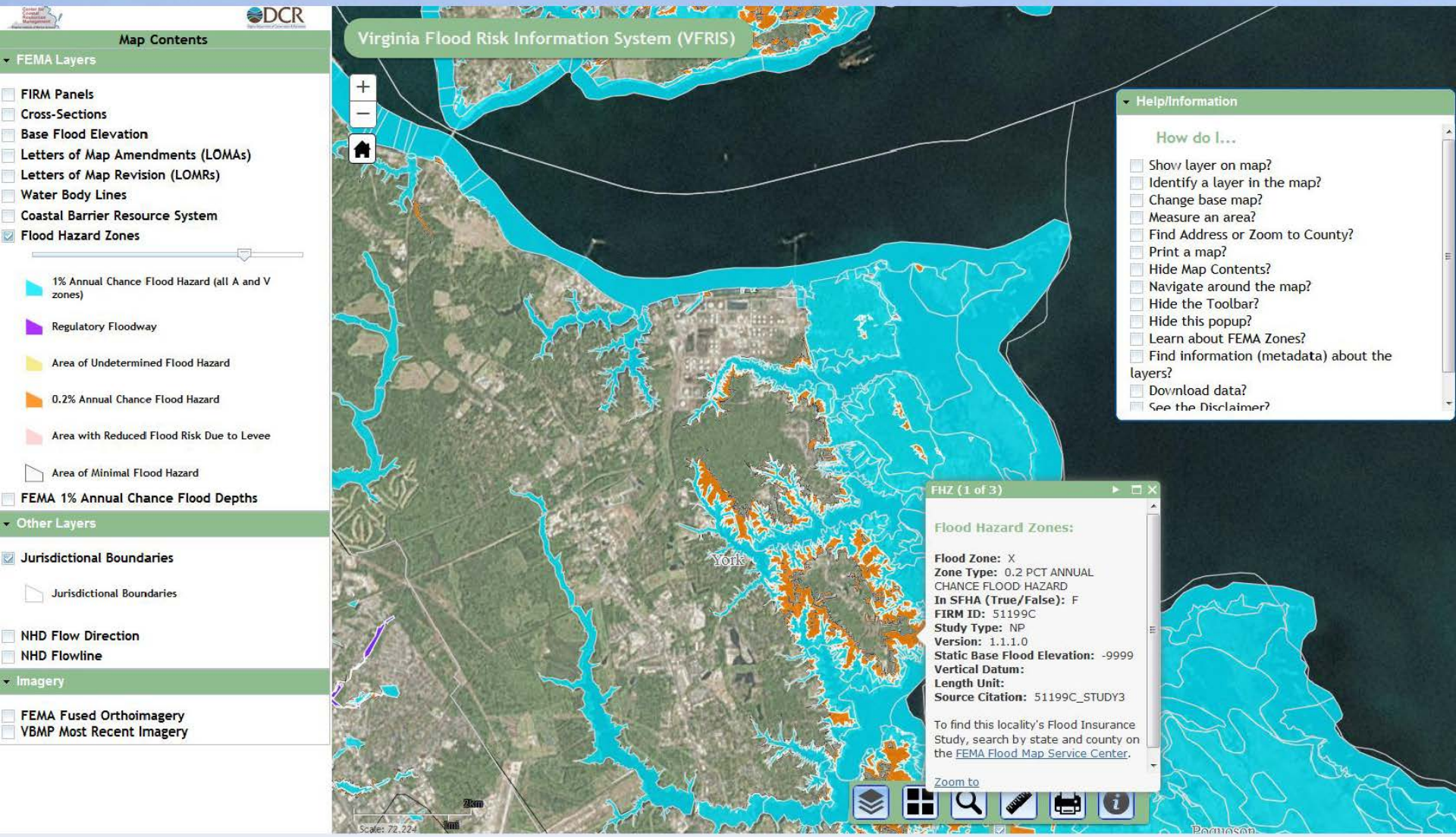

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FEMA

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Search

Languages

- MSC Home
- MSC Search by Address
- MSC Search All Products
- MSC Products and Tools
  - Hazus
  - LOMC Batch Files
  - Product Availability
- MSC Frequently Asked Questions (FAQs)
- MSC Email Subscriptions
- Contact MSC Help

FEMA Flood Map Service Center: Search All Products

Choose one of the three search options below and optionally enter a posting date range.

Jurisdiction

State

-- Select --

Jurisdiction Name

Jurisdiction Name or FEMA ID

(Ex. Fairfax County-wide or 51059C)

Product ID

Product ID

(Ex. Panel Number, LOMC Case Number)

› Filter By Posting Date Range *(Optional)*

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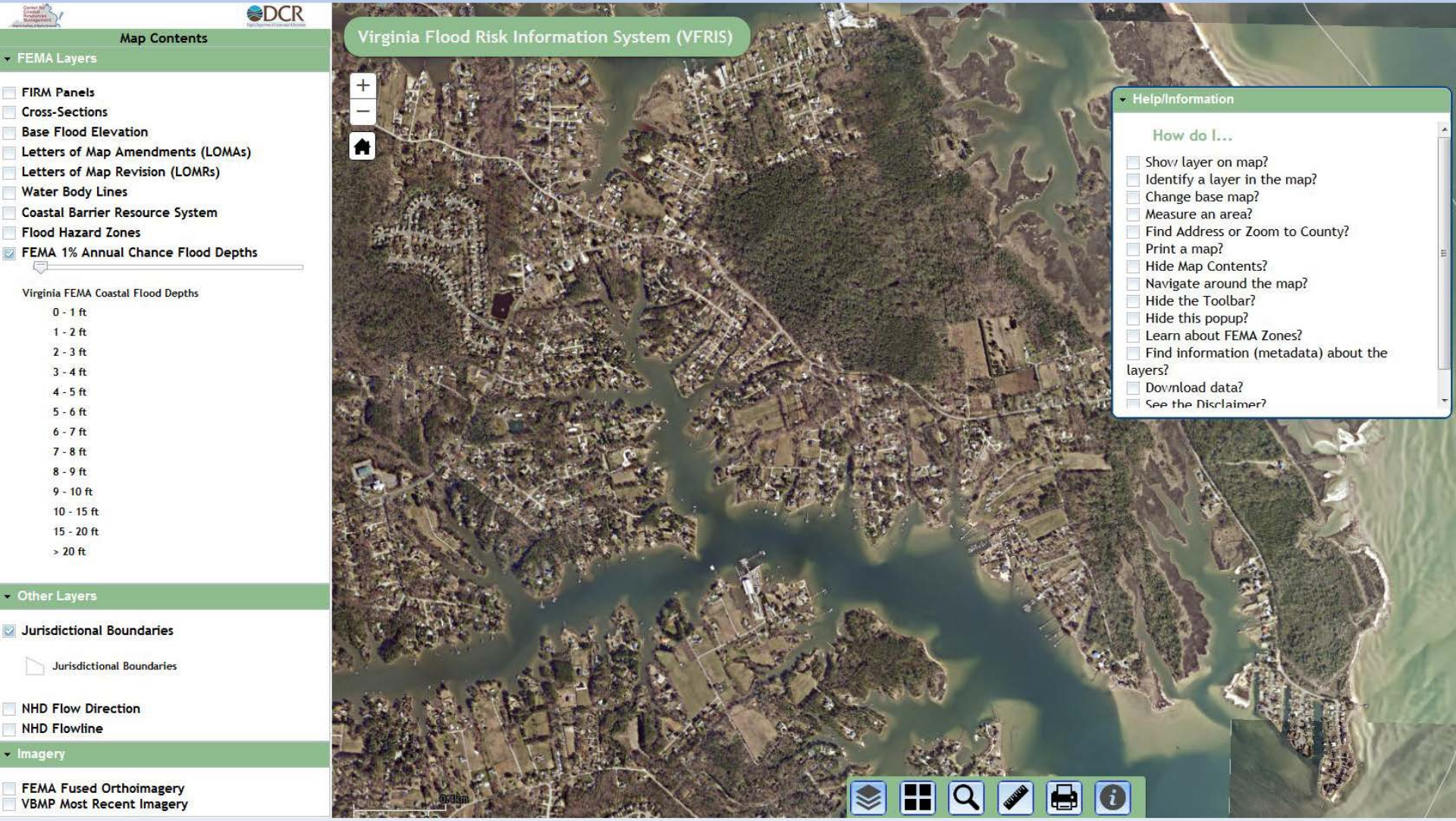

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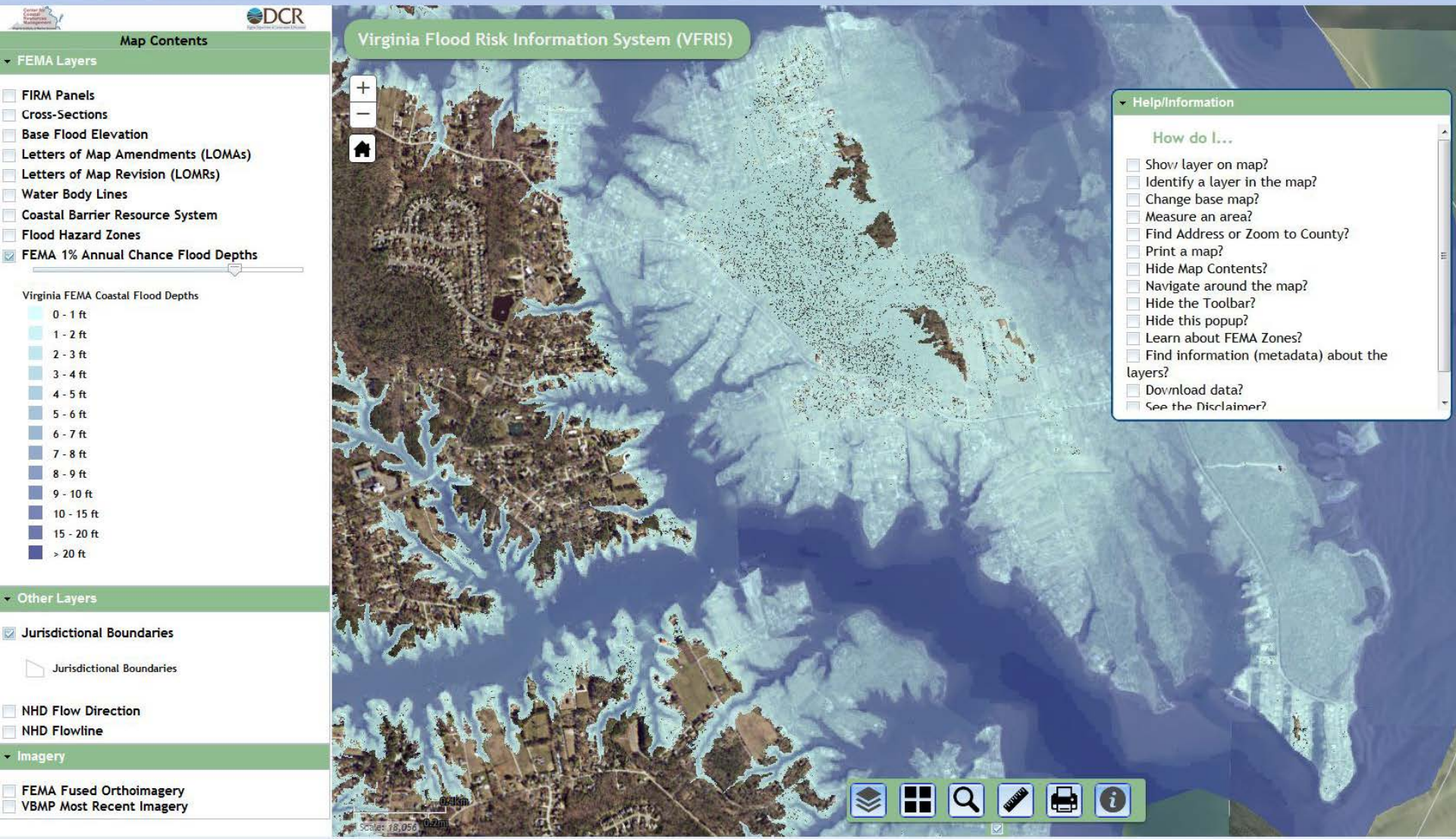

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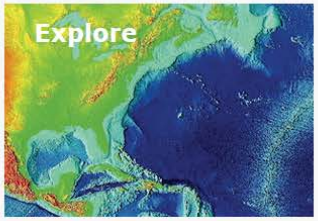

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DATA CATALOGUE

Tuesday, September 27, 2016

FORECASTS | ADAPTATIONS | TOOLS | MAPS & DATA | PLANNING & POLICY

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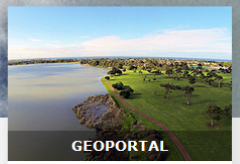
Evidence-based planning for changing climate

Maps & Data

Explore maps and get the data that illustrate conditions pertaining to inundation, natural resources, infrastructure, and demographics.



GEOPORTAL

The Geoportal provides easy and convenient ways to access and share geospatial data.

Geoportal

Use the data catalogue to search, browse and download data. Launch the map viewer if you would like to see all the data available for a particular map extent. Create an account if you would like to save your searches.

HOME | SEARCH | BROWSE | LAUNCH MAP VIEWER

Home

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You can simply...

Find Data

Search

Search Data

Download Data

You can do more...

Be a User

Create an Account

Save your Searches

Share Data

Create Metadata

Upload your Data

Publish Data

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Living Shoreline | Search

Search Data

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Share Data

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Upload your Data

Publish Data

Search

Text: Living Shoreline Search

Records shown from: This Site
Click here to select different site or configure search.

Additional Options Clear

WHEN

Intersecting Fully within

Start Date: (yyyy-mm-dd)

End Date: (yyyy-mm-dd)

WHERE

Anywhere Intersecting Fully within

Text:

Results 1-10 of 14 record(s) 1 2 > Last

Expand All Zoom To Results Zoom To Search Area

- ChesBayShores_1937
- ChesBayShores_2009
- Shoreline Change Data Map Services
- North Atlantic Continually Updated Shoreline Product
- Composite Shoreline of the Continental United States Derived from NOAA-NOS Coastal Survey Maps Developed from 1901-1995 Source Data
- 1937 Aerial Imagery along Virginia's Shoreline
- NOAA Office for Coastal Management Sea Level Rise Data: Coastal Flood Threshold Inundation Extent
- Virginia Shoreline Inventory (1998-2015): Land Use, Land Cover
- USGS Map service: Coastal Vulnerability to Sea-Level Rise
- 2014 NOAA Post Hurricane Sandy Topobathymetric LiDAR Mapping for Shoreline Mapping

See results through REST API: GEORSS ATOM HTML FRAGMENT KML JSON DCAT CSV

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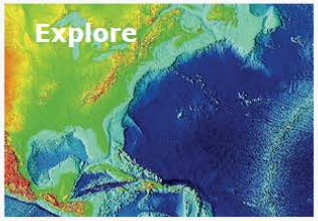

PLANNING AND POLICY

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Thursday, February 23, 2017

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Planning & Policy

Adaptations to climate change include planning and policy actions. Often called non-structural, these activities include comprehensive planning, zoning and building codes, insurance and the community rating system.

Are you a local manager who is looking for information and ideas to implement? Do you need guidance on how to qualify your community for the Community Rating System? Are you simply looking for examples of building codes that have been successfully adopted in other communities? You will find answers here.

Social vulnerability is a description of a community's capacity to recover from natural or man-made disasters based on the social or economic characteristics of the community. It intersects with the physical risk of disasters (e.g. probability of flooding) to determine the overall ability of a community to withstand a given disaster.

Read More

Social Vulnerability Viewer

The National Flood Insurance Program's Community Rating System (CRS) is a voluntary incentive based program that rewards localities that implement adaptive floodplain management standards, such as green infrastructure, by providing flood insurance policy holders with premium reductions.

Read More

The Coastal Virginia CRS Workgroup website

CRS Guide

The Virginia Coastal Policy Center at the William and Mary Law School (VCPC) has produced and collaborated on reports addressing flooding from a legal perspective.

VCPC Reports

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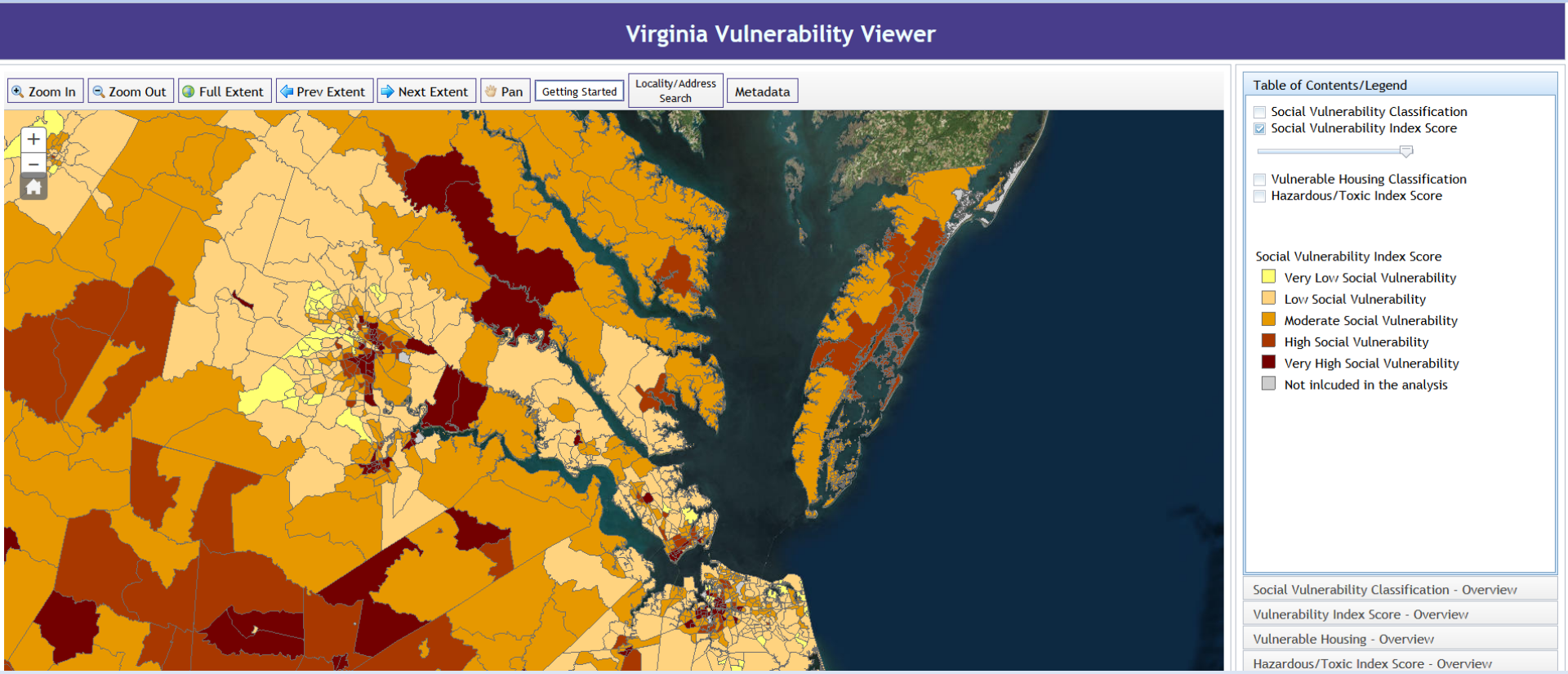
SOCIAL VULNERABILITY



WILLIAM & MARY
PUBLIC POLICY

Sarah Stafford – Director, Thomas Jefferson Program in Public Policy

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CRS GUIDANCE

Double Donor Challenge: Click here to support our work on sea level rise adaptation and see it double immediately! All contributions will be matched by a donor up to $50,000. ×

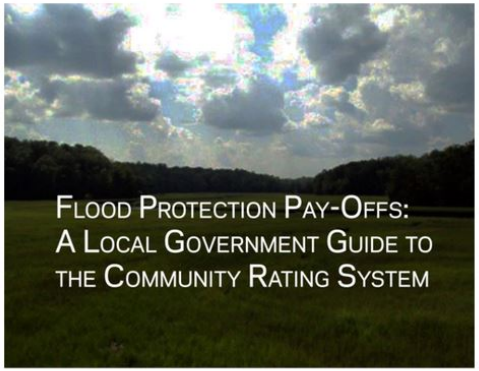
WETLANDS WATCH

ABOUT US OUR WORK PUBLICATIONS DIRECTORY

Community Rating System

Known as the CRS, the Community Rating System is a FEMA program that incentivizes a strong floodplain management program by offering discounts on flood insurance rates for all policyholders within that community. Communities can gain points by adopting various floodplain management activities. Total points correspond to different ratings (also known as classes), which in turn correspond to discount percentages on flood insurance. With ratings from 10 to 1 (10 being the worst rating and 1 being the best), communities can earn up to a 45% discount on flood insurance for all policyholders. With every rating improvement, discounts for policyholders in the Special Flood Hazard Area increase in increments of 5%.

Click here for the website of the Coastal Virginia CRS Workgroup



Wetlands Watch released a report in March 2015 to assist local governments

WETLANDS WATCH
WETLANDSWATCH.ORG

Mary-Carson Stiff and Skip Stiles

March 2015

FLOOD PROTECTION PAY-OFFS

A LOCAL GOVERNMENT GUIDE TO THE COMMUNITY RATING SYSTEM

Lead Author: Shannon Hulst Jarbeau, CFM
Contributing Author: Mary-Carson Stiff, JD, CFM

Review Draft

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LEGAL ANALYSIS

VCPC Reports & Partner Documents

Sea Level Rise & Recurrent Flooding

Projections based on historical trends as well as climate data suggest that parts of coastal Virginia are particularly at risk of sea level rise and recurrent flooding. This change could potentially disrupt coastal ecosystems and human development, but forward-thinking governance may mitigate loss of life and property. The following papers discuss Virginia localities' options and abilities to respond to flooding risks:

Strategic Planning for Sea Level Rise and Recurrent Flooding

These papers discuss current and future ideas for adapting to sea-level rise and recurrent flooding in Virginia, detailing legal frameworks and paths to a more resilient coastline, as well as the economic costs associated with lack of planning:

- **Money for Nothing: Leveraging Donated Property to Satisfy Federal Grant Match Requirements** (*Click here to view report appendices)*
- **Tools for a Resilient Virginia Coast: Designing a Successful TDR Program for Virginia's Middle Peninsula**
- **Cost of Doing Nothing: Economic Consequences of Not Adapting to Sea Level Rise in the Hampton Roads Region**
- **Hampton Roads Intergovernmental Pilot Project: Memo and Legal Primer**
- **Tidal Wetlands Protection in Virginia: Time for an Update (.pdf)**
- **Adaptive Planning for Flooding and Coastal Change in Virginia: State and Local Areas of Action (.pdf)**
- **Using Zoning Tools to Adapt to Sea Level Rise (.pdf)**

Potential Liability of State and Local Government

William & Mary Law School
Virginia Coastal Policy Center

Elizabeth Andrews – Director, Virginia Coastal Policy Center

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COUNTY ORDINANCES

Locality	Zoning	Chesapeake Bay Preser	Subdivision	Stormwater Manageme	Erosion and Sediment Cor	Floodplain Managment	Freeboard	Wetlands Management	Other Notable
Accomack	Chapter 106	Chapter 106, Article XVI	Chapter 78	Chapter 38 Article IV	Chapter 38 Article III	Chapter 106 Article XV	2'	Chapter 102 Article III	Barrier Island Districts: Chapter 106 Article VII
Alexandria	Separate Ordinance	Article XIII 13-105	Article X Division E	Article XIII 13-110 throug	Title 5 Chapter 4	Article VI 6-304	1'	Within Article XIII	
Arlington	Separate Ordinance	Chapter 61	Chapter 21	Chapter 60	Chapter 57	Chapter 48	1'	With 57 & 61	
Caroline	Separate Ordinance	Zoning, Article XV, Sectic	Chapter 98	None	Chapter 45	Zoning, Article XV, Section 6	3'		
Charles City	Separate Ordinance	Separate Ordinance	Separate Ordinance	Separate Ordinance	Separate Ordinance	Separate Ordinance	1'	Separate Ordinance	Environmental & Site Plan Ordinance/Requirements
Chesapeake	Separate Ordinance	Chapter 26, Article IX	Chapter 70	Chapter 26 Article VII	Chapter 26 Article III	Chapter 26 Article IV	1.5'		
Chesterfield	Chapter 19	Chapter 19, Article V, Div	Chapter 17	Chapter 8 and Chapter 1	Chapter 8, Article II, Section	Chapter 19, Article V, Division	1'		
Chincoteague	Appendix A	None	Appendix B	None	Chapter 22, Article IV	Chapter 30, Article II	1'		Chapter 30 generally about floods
Colonial Heights	Chapter 286	286-326	Chapter 250	Chapter 245	Chapter 241	286-320	1'	286-322	
Dinwiddie	Chapeter 22	None	Chapter 18	Chapter 17.3	Chapter 9	Chapter 11	1'		
Dumfries	Chapter 70	Chapter 70, Article III, Div	Chapter 54	Chapter 26 Article V	Chapter 26 Article IV	Chapter 70, Article III, Division 9	1'		
Emporia	Chapter 90	None	Chapter 66	Chapter 78, Article IV	Chapter 34, Article IV	Chapter 90, Article VI	2'		
Essex	Appendix B	Appendix B, Article XV-1	Appendix A	None	Chapter 16	Chapter 18	1'	Chapter 34	
City of Fairfax	Chapter 110	Chapter 110, Articcle II, D	Chapter 86	Chapter 110, Articcle II, I	Chapter 110, Articcle II, Divis	Chapter 110, Articcle II, Divisior	1.5'		
Fairfax County	Separate Ordinance	Chapter 118	Chapter 101	Chapter 124	Chapter 104	Appendix A	1.5'	Chapter 116	Chapter 123 - Coastal Primary Sand Dune Zoning Ordinance; Appendix L No wake zones
Falls Church	Chapter 48	34-10	Chapter 38	Chapter 35	35-15	Chapter 48, Article IV, Divison	0'		
Franklin	Chapter 25	N/A	Appendix C	Chapter 7, Article IV	Chapter 7, Article II	Chapter 9	1'		
Fredricksburg	Chapter 72-3 and Chapt	72-34.5	72-25	72-54.3	78-13.12	72-34.3	1.5'	72-34.4	38-402 VSMP Permits
Gloucester	Appendix B	Chapter 5.5	Chapter 15	Chapter 6	Chapter 7.5	Chapter 8.5	2'		
Greensville	Separate Ordinance	None	Appendix A	Chapter 18.2	Chapter 9	Zoning Ordinance, Article 10	2'		Sand dune
Hampton	Separate Ordinance	Zoning Ordinance Chapte	Chapter 35	Chapter 33.2	Chapter 13.1	Zoning Ordinance Chapter 9 Art	3'		Sand dune
Herndon	Chapter 78	78-304.4	Chapter 70	Chapter 26, Article VIII	Chapter 26, Article III	78-304.2	1.5'		
Isle of Wight	Appendix B	Appendix B-1	Appendix A	Chapter 14A	Chapter 6	Zoning Ordinance Article XI Sec	1.5'		
James City	Chapter 24	Chapter 23	Chapter 19	Chapter 18A	Chapter 8	Zoning Ordinance Article VI Divi	2'		
King and Queen	Part II, Chapter 3	Part II, Chapter 3, Article	Part II, Chapter 4	None	Part II, Chapter 5	Part II, Chapter 3, Article 10	0'	Part I, Chapter 22, Article III	
King George	Appendix A	Appendix A, Article 8	Appendix B		Chapter 6	Appendix A, Article 9	0'	Chapter 16	Appendix A, Article 13, COASTAL PRIMARY SAND DUNE ZONING ORDINANCE
King William	Chapter 86	Chapter 86, Article IX, Div	Chapter 66	None	Chapter 30, Article III	Chapter 86, Article XX	1.5'	Chapter 82, Article II	
Lancaster	Part I	Part IV	Part II	None	Part III	Part I, Article 23	0'	Chapeter 26, Article III	Chapeter 26, Article II, Coastal Primary Sand Dune Regulations
Leesburg	Separate Ordinance	None	Separate Ordinance	Chapter 14, Article II		Zoning, Article 13			
Loudoun	Separate Ordinance	None	Ordinances, Part 12, Title 4	Ordinances, Part 10, Titl	Ordinances, Part 12, Title 2,	Zoning, Section 4-1500	0'		
Manassas	Chapter 130	None	Chapter 106	Chapter 58, Article IV	Chapter 58, Article III	Chapter 66	0'		Chapter 118, Article VI
Manassas Park	Chapter 31	None	Chapter 21	Chapter 8, Article III	Chapter 8, Article II	Chapter 31-21			
Mathews	Chapter 175	Chapter 175, Article 22	Chapter 140	None	Chapter 50	Chapter 63	1'	Chapter 166	Chapter 122, sand dunes
Middlesex	69	Zoning, Article 4a	64	None	21	23	0'	68	43, no wake policy
Newport News	Chapter 45	Chapter 37.1 Article V	Appendix B	Chapter 37.1	Chapter 37.1 Article VII	Zoning Ordinance Article XXXI D	2'		Sand dune
Norfolk	Appendix A	Zoning Ordinance Chapte	Chapter 42.5	Chapter 41, and Chapter	Chapter 15	Zoning Ordinance Chapter 11 S	3'		
Northampton	Separate Ordinance	In Zoning, 154.2.163	Chapter 156	None	Chapter 153	Chapter 159	1'	Chapter 151	Chapter 152: Coastal Primary Sand Dunes
Northumberland	Chapter 148	Chapter 54	Chapter 128	Chapter 54-26	Chapter 64	Chapter 76	2'	Chapter 144	Chapter 114: Sand Dunes
Petersburg	Separate Ordinance	Chapter 122, Article II	Chapter 102	Chapter 50, Article IV	Chapter 50, Article V	Chapter 58	0'		
Poquoson	Appendix A	Appendix A, Article XI IV	Appendix B	Chapter 34, Article V	Chapter 34, Article III	Chapter 42 and Appendix A, At	3'	Chapter 34, Article IV	
Portsmouth	Chapter 40.1	Chapter 9.1	Chapter 33.1	Chapter 31.2	Chapter 11	Chapter 14	3'	Chapter 39	
Prince George	Chapter 90	Chapter 90, Article XIVA	Chapter 70	Chapter 38, Article IV	Chapter 38, Article II	Chapter 90, Article XV	1'		
Prince William	Chapter 32	32-504	Chapter 25	Chapter 23.2		32-501			
Purcellville	Separate ordinance	None	Zoning, Appendix A	None	Managed by Loudoun	Zoning, Article 12			
Richmond City	Separate ordinance	Chapter 14, Article IV	Chapter 25	Chapter 14, Article V	Chapter 14, Article III	Chapter 14, Article II	1'		
Richmond County	Separate ordinance	Zoning, 2-13	Separate Ordinance	Zoning, 4-7-4	Zoning, 4-8	Separate ordinance			
Smithfield	Separate Ordinance	Zoning Ordinance Article	Separate Ordinance	N/A	Zoning Ordinance Article 11.	Zoning Ordinance Article 3.O	0'		
Southampton	Chapter 18	N/A	Chapter 14	Chapter 13.5	Chapter 6	Zoning Ordinance Article XIV	1.5'		
Spotsylvania	Chapter 23	Chapter 6A	Chapter 20	Chapter 19A	Chapter 8	23-7-2	1'		
Stafford	Chapter 28	Chapter 27B	Chapter 22	Chapter 21.5	Chapter 11	28-57	3'	Chapter 27	Chapter 27A: Coastal Primary Sand Dunes

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Virginia Coastal Policy Center

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STAY TUNED ….

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Would you like to be a reviewer?

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